

Radio Shack
Model III

Cat. No. 26-1974

SUCCESS WITH MATH™

Comprehensive, self-paced math tutorial.

Quadratic Equations

Requires 48K



CBS
SOFTWARE

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Success with Math™
Quadratic
Equations
User's Manual

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10 9 8 7 6 5 4 3 2 1

Program Objective

The Success with Math™ series provides an environment of personalized encouragement in which to learn math. The Quadratic Equations program designed for grade levels 9 to 12 provides comprehensive drill and practice solving quadratic equations using the factoring process. An understanding of factoring is emphasized along with procedures for setting each factor equal to zero and solving as separate equations. After you load the program, the program itself instructs you in how to proceed.

Required Equipment

- TRS-80® Model III with 48K

Starting the Program

We recommend that you make a copy of your program diskette and use the copy for your practice sessions. Backup instructions are included at the end of this manual if you are not familiar with this process. After making your backup of the program diskette, you can use the following steps each time you begin your program.

1. Turn on all peripherals connected to the computer and then turn on the computer.

2. Insert the working copy of the diskette into Drive 0 and close the drive door.
3. Press the RESET button. The AutoLoad function is engaged. After the copyright notice, the Quadratic Equations program begins. The program itself displays program operation instructions.

Program Description

All equations in the program are randomly generated in the form

$$AX^2 + BX + C = 0$$

where A, B, and C are integers. You may choose between two levels of difficulty. For easier problems, the coefficient of the quadratic term (A) is always 1. More difficult equations have a quadratic coefficient of 2 or 3.

The screen is divided into three sections: original equation, work area and message/instruction area. When each new equation is presented, the message/instruction area contains a main menu with three options. For example:

PROBLEM #1: $X^2 - 3X - 10 = 0$
Work Area

ENTER ONE OF THE FOLLOWING: (* TO QUIT)

- 1) DIVIDE BOTH SIDES BY A NUMBER
- 2) FACTOR THE LEFT SIDE
- 3) SET EACH FACTOR = 0 AND SOLVE

If the integers A, B, and C have a common factor, choose option 1. You are then asked to enter the number to be divided into each term. The equation is then simplified to reflect the results of the division.

After the equation is simplified or, as in the example, the integers A, B, and C do not have a common factor, choose option 2. You are then asked to enter the correct factors, one at a time, in the work area. If you enter incorrect factors, an error message appears along with the product of the incorrect factors to illustrate why the answer was wrong. You may then try a new pair of factors. If a second error is made, the program automatically branches to a tutorial section that explains in detail how to factor the quadratic expression.

After the correct factors are entered, the main menu reappears. You must then select option 3 to set each factor to zero and solve. A new menu containing the rules required for solving equations appears, and the screen now looks like this:

```

PROBLEM #1:          X2 - 3X - 10 = 0
Work Area            (X - 5) (X + 2) = 0
                   -----> X - 5 = 0
  
```

ENTER ONE OF THE FOLLOWING: (* TO QUIT)

- 1) ADD SAME NUMBER TO BOTH SIDES
- 2) SUBTRACT SAME NUMBER FROM BOTH SIDES
- 3) MULTIPLY BOTH SIDES BY SAME NUMBER
- 4) DIVIDE BOTH SIDES BY SAME NUMBER

Using these rules, you solve for X in each equation, step by step:

PROBLEM #1: $X^2 - 3X - 10 = 0$

$(X - 5) = 0$	$(X + 2) = 0$
$+ 5 \quad + 5$	$- 2 \quad = -2$
$X \quad = 5$	$X \quad = -2$

THAT IS CORRECT.

THESE ARE THE SOLUTIONS TO THE EQUATION.

All errors are immediately noted on the screen and explained. You may then try a new answer. Errors are divided into two categories: procedural and computational. Procedural errors involve the incorrect use of a rule. Computational errors involve a mistake in calculation. The program tracks the type and numbers of errors made and displays the totals on the screen after the solution is reached.

You must enter the correct answer for each step before the program continues to the next step in the solving process. You always succeed in solving the equation and know exactly where errors were made.

Other Programs in the Success with Math™ Series

Addition and Subtraction — Grade Levels 1 to 4

Multiplication and Long Division — Grade Levels
2 to 8

Linear Equations — Grade Levels 7 to 11

Backup Instructions

Never use your original program diskette for daily operations. Make a backup (copy) of this diskette and use the copy for your day-to-day practice sessions. Store the original in a safe place and use it **only** for making copies. The following steps explain how to make a copy of your program diskette.

1. Turn on any peripherals that are connected to the computer and then turn on your computer.
2. Place a new, blank diskette in Drive 1, and close the drive door.
3. Place a Model III TRSDOS system diskette in Drive 0 and close the drive door.
4. Press the reset button.
5. The screen shows:

Date MM/DD/YY ?

Enter the date. For example, for March 7, 1984,
type 03/07/84 **ENTER**

6. Press **ENTER** at the Time prompt.
7. When TRSDOS Ready appears, remove the TRSDOS system diskette and insert the Success with Math program diskette into Drive 0. Type:

BACKUP :0:1 **ENTER**

8. The screen shows:

SOURCE Disk Master Password?

Type:

PASSWORD **ENTER**

You may see:

Diskette contains DATA. Use Disk or not?

or

Do you wish to RE-FORMAT the diskette?

If the questions appear, type Y **ENTER** for each question.

When the backup process is complete, the screen shows:

** Backup Complete **

9. Remove the original program diskette and store it in a safe place.

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